Before the
FEDERAL COMMUNICATIONS COMMISSION
Washington, D.C.

In the Matter of	)	
	)	
James Cable, LLC's	)	CSR-
Request for Waiver of	)	
47 C.F.R. § 76.1204(a)(1)	)	

To: Chief, Media Bureau

REQUEST FOR WAIVER

Pursuant to Section 629(c) of the Communications Act, Section 706 of the Telecommunications Act of 1996, and Sections 1.3 and 76.7 of the Commission's rules, James Cable, LLC d/b/a CommuniComm Cable ("James Cable") respectfully requests that the Commission grant it a waiver from the "integration ban"[1] through at least December 31, 2009.

First, this temporary relief is critical to the timely delivery of high-definition, competitive telephone, broadband and other advanced services to rural America. Application of the integration ban in rural America -- right in the midst of the national effort toward universal broadband deployment, the DTV transition, and the delivery of competitive telephone and advanced services to all Americans -- is the wrong rule in the wrong place at absolutely the wrong time.

Second, James Cable faces significant financial difficulties, marked by negative free cash flow and a precipitous decline in the number of cable subscribers. The Commission granted a partial waiver of the integration ban to Charter under similar circumstances, and should do so again here so that the integration ban does not prevent James Cable from making much needed capital investments in its rural systems.

[1] *See* 47 C.F.R. § 76.1204(a)(1) (second sentence).

I. THE INTEGRATION BAN AND RURAL AMERICA: WRONG PLACE, WRONG TIME.

James Cable is small operator of rural cable systems in thinly-populated areas of nine states in the South and inner West. More than seventy percent of James Cable's systems serve fewer than 1,500 subscribers, and thirteen of its thirty-four headends serve fewer than 300 subscribers. *All* of James Cable's systems are "small systems" under the Commission's rules,[2] and all are located in areas that the U.S. Census Bureau classifies as rural. A list of James Cable's franchise service areas is attached hereto as Exhibit 1. This list illustrates the emphatically rural nature of James Cable's footprint from Gu-Win, Alabama west to Possum Kingdom, Texas and north from there to Encampment, Wyoming, and similarly small towns and unincorporated areas in between.

Congress and the Commission have repeatedly emphasized that the delivery of advanced services to these rural communities is one of the most fundamental federal telecommunications policy objectives. James Cable has worked hard to dedicate its private investment to this public goal. After emerging from bankruptcy in 2003, James Cable invested over $17 million in an ambitious upgrade to provide broadband to 95% of its customers, up from 50% in 2004. But much remains to be done. James Cable still cannot offer any Video on Demand (VOD) or competitive telephone services, and is able to offer only very limited high-definition (HD) services. Two-thirds of James Cable's plant has a capacity of 550 MHz or less, and some has a capacity of only 330 MHz.

The delivery of advanced services to rural areas is much more difficult than to the large urban areas that are generally served by the large telephone companies and cable operators. Because of the low population densities of the areas served by James Cable, its systems pass

[2] The Commission has defined a "small system" as a "cable television system that serves 15,000 or fewer subscribers." 47 C.F.R. § 76.901(c).

only 40 homes per mile of deployed cable facilities, compared to 200-600 homes per mile typically enjoyed by operators in larger systems.[3] James Cable does not even serve 600 customers from the majority of its *headends*; its median number of basic customers served per headend is 541. The delivery of advanced services is much more expensive per customer in rural America, because more plant is required and because there are fewer customers to whom costs may be spread.

This is especially so in lower-income rural areas, where fewer customers can afford higher-margin premium services – or often any services at all. The population of James Cable's service areas is significantly less affluent and significantly older than the national average. The nationwide household median income is 39% higher than the median household income in James Cable's service area.[4] In addition, James Cable's service areas have a percentage of senior citizens that is 24% higher than the national average.[5] As a result, James Cable has only a 38% penetration rate for its cable service, barely half of the penetration rate enjoyed by large operators in urban or other wealthier areas.[6]

In the face of these obstacles, James Cable needs all of the resources it can muster to make the necessary upgrades to be able to deploy HD, VOD, telephone and other new digital services. But the integration ban would impose enormous costs, the threat of which has forced James Cable to suspend important upgrades. James Cable could try to – slowly – recoup some of

[3] CS Docket 97-80, Letter from Neil Smit, President & CEO, Charter Communications, Inc., to Hon. Kevin J. Martin, Chairman, FCC, (Apr. 4, 2007) (citing *See* Television & Cable Factbook 2007, Cable Vols. 1-2). *See also* id. ("An[] instructive measure of the rural nature of a system is its "homes passed per mile" of deployed cable facilities. Investors and cable analysts place significant weight on this figure in assessing the cost of providing cable services to a community and the expected return on investment, since it is much more expensive per customer to deliver services (especially broadband and other advanced services) to less densely populated rural areas.").

[4] Based on U.S. Census data.

[5] *Id.*

[6] *See* Bresnan Request for Waiver at 5. ("Bresnan's penetration rate of homes passed is less than 50%. By comparison, larger MSOs serving larger, denser markets typically have penetration rates of more than two-thirds of homes passed.").

these costs from its consumers through higher set-top lease rates, but doing so would also cause it to lose even more of its price-sensitive customers to DBS.[7]

The Commission has previously found that special consideration of waivers for small operators, including James Cable, is appropriate and necessary to advance the Commission's broader agenda for rural America.[8] In this docket, the Commission expressly recognized the need to give special consideration of waivers for small systems for its Section 629 set-top box regulations:

> We recognize … that there may be a negative cost impact upon some small systems as a result of compliance with these obligations …. To the extent that small cable systems would experience economic hardship as a result of these obligations, we will consider waiver requests on a case-by-case basis.[9]

That is precisely what is needed here to protect rural consumers from localized costs that would far exceed any incremental benefits they would receive from the ban. In urban areas, where consumers have access to and can afford expensive retail CableCARD devices, the Commission has speculated that the costs of the ban will be exceeded by benefits. But the same cannot be true in the near-term in James Cable's rural service area, where retail devices are not in demand and often not even available. No consumer has ever requested a CableCARD from James Cable. This fact is not surprising, given that James Cable's markets are typically very far from the nearest Circuit City or Best Buy,[10] and given that lower-income rural residents are less

---

[7] James Cable emphatically agrees with BendBroadband and other small operators that it would be arbitrary, unlawful, and contrary to the Commission's policy of competitive neutrality for the Commission to continue to apply the integration ban to small cable operators while turning a blind eye to DirecTV. DirecTV could not possibly be more entitled than James Cable to the exemption under Section 76.1204(a)(2) of the Commission's rules because DirecTV no longer supports new retail navigation devices. See BendBroadband Request for Waiver at 13-18.

[8] *See James Cable Partners, L.P.*, Order, 17 FCC 19,038 (Oct. 4, 2002) (extending waiver of EAS rules to James Cable as small operator).

[9] *Commercial Availability of Navigation Devices*, CS Docket 97-80, Second Report and Order and Second Further Notice of Proposed Rulemaking, 18 FCC Rcd 20,885, ¶ 27 (2003).

[10] For example, the closest Best Buy to James Cable's service area in Lusk, Wyoming is 150 miles away in Rapid City, South Dakota.

likely to be interested in purchasing up-front the ultra-expensive $1000-$7000 CableCARD devices offered at retail.[11]

James Cable will comply with its obligation to provide and support CableCARDs if and when asked. But it would grossly disserve federal priorities, and consumers, to force James Cable to delay the deployment of HD, competitive telephone and advanced services to rural America just for the purpose of back-stopping its support for retail products that none of its customers are asking it to support. Some proponents of the integration ban argue that the ban itself will stimulate both the supply and demand for new, affordable retail navigation devices. That speculative theory can be tested by applying the rule first to larger MVPDs operating in more urban areas, where at least the rule arguably has some chance of immediate relevance. But the near-term application of the ban, or not, to James Cable's small systems will have no material impact on the success or failure of the multi-billion consumer electronics market, CableCARDs, or the theory that the integration ban will stimulate the development of new retail devices. The Commission could reevaluate temporary waivers granted to rural operators when the record has been supplemented with the real-world results of the initial application of the ban to larger MVPDs.

In the meantime, the public interest clearly favors a temporary waiver for James Cable during these next few critical years for the DTV transition, the national goal of universal broadband deployment, and the long-awaited arrival of residential competitive telephone services for rural Americans. As the Executive Director of the League of Rural Voters explained:

[11] *See* CS Docket 97-80, Reply Comments of Charter, at Exhibit A (Sept. 28, 2006) (showing that the only CableCARD-ready devices from Best Buy and Circuit City in September 2006 were DTVs priced from $1700-7000 and a TiVo Series 3 priced at $800 plus more than $150 in TiVo subscription fees.

> On behalf of the League of Rural Voters, I write to ask the Federal Communications Commission to grant a temporary waiver of the pending cable set-top box integration ban, which would adversely impact consumers, particularly rural America, by placing an effective monthly "tax" on their set-top boxes. … [I]ncreasing the cost of digital set-top boxes would make America's digital transition goals even more challenging to achieve. It would dampen the incentive for rural Americans to switch from analog to digital services that offer premium content and help keep rural areas connected. By reducing the ability of rural Americans to afford digital cable boxes, the FCC will also reduce the incentive for network operators to spread their digital networks far and wide throughout rural America.[12]

The Commission is required to "take a 'hard look' at meritorious applications for waiver, and [] consider all relevant factors."[13] A generally-beneficial regulation should therefore be waived in individualized circumstances where application of the rule would result in costs to the public that would outweigh its incremental benefits.[14] Congress and the Commission have repeatedly emphasized the urgency and priority of the digital transition and the delivery of advanced services to all Americans. As demonstrated above, the balancing of public interests clearly favors at least a temporary waiver narrowly targeted to rural areas and to the next two years that are critical for both of these two federal priorities. The Commission should therefore grant James Cable's request for waiver.

---

[12] CS Docket 97-80, Letter from Niel Ritchie, Executive Director, League of Rural Voters, to Hon. Kevin Martin, Chairman, Federal Communications Commission (Oct. 2, 2006) at 1-2.

[13] *KCST-TV, Inc. v. FCC*, 699 F.2d 1185, 1191-1192 (D.C. Cir. 1983) (vacating FCC denial of waiver request, holding that once the premise of the rule had been shown not to apply, the "logic of applying [the rule] collapses," and it was arbitrary to apply the rule, i*d.* at 1192, 1195).

[14] *WAIT Radio v. FCC*, 418 F.2d 1153, 1157 (D.C. Cir. 1969) (« The Commission is charged with administration in the "public interest." That an agency may discharge its responsibilities by promulgating rules of general application which, in the overall perspective, establish the "public interest" for a broad range of situations, does not relieve it of an obligation to seek out the "public interest" in particular, individualized cases."). Accordingly, Section 76.7(i) authorizes the Commission to grant waivers where application of a general rule would not, on balance, serve the public interest, *see* 47 C.F.R. § 76.7(i) ("The Commission, after consideration of the pleadings, may determine whether the public interest would be served by the grant, in whole or in part, or denial of the request . . . ."), while Section 1.3 allows for waivers upon a showing of "good cause." 47 C.F.R. § 1.3 ("Any provision of the rules may be waived by the Commission on its own motion or on petition if good cause therefor is shown.").

II. Because James Cable Has a History of Negative Free Cash Flow, a Waiver is Needed to Sustain Investment in Network Upgrades for its Rural Systems.

The Commission recently granted a temporary, renewable waiver from the integration ban to Charter Communications, Inc. in light of Charter's financial condition and the financial difficulty of delivering advanced services to rural systems when faced with negative free cash flow.[15] James Cable's "financial straits," and the "financial hardship" that would be imposed on James Cable by the ban, are at least as compelling for waiver as the facts on which the Commission found presented "good cause" to grant a waiver to Charter.

Because of the significant expense of upgrading systems to provide advanced services to its remote, rural markets, and because of intense competition from the much larger DBS operators,[16] James Cable has suffered through a long period of sustained and severe financial difficulty.[17] James Cable has lost 28% of its subscribers since 2001, and in 2003 it was forced to declare bankruptcy. It had negative free cash flow of at least $3 million each year from 2002 through 2005, and, even with a waiver from the integration ban, expects to have negative free cash flow again in 2007. James Cable had a small, positive free cash flow in 2006, but this fact is attributable to a severe cutback in capital expenditures in 2006. However, to remain competitive and maintain its network, James Cable must return to higher levels of capital expenditures in 2007 and beyond, which means that it expects to return to negative free cash flow in 2007 and for the foreseeable future. And even in 2006, James Cable would have experienced negative free cash flow if it has been required to comply with the integration ban at that time.

---

[15] *Charter Communications, Inc. Request for Waiver of Section 76.1204(a)(1) of the Commission's Rules*, CSR-7049-Z, CS Docket No. 97-80, Mem. Opinion and Order, DA 07-2008 (rel. May 4, 2007) ("*Charter Waiver Order*").

[16] Because of their much larger size, DirecTV and EchoStar can obtain programming on better rates and terms than James Cable, and enjoy significantly more favorable economies of scale. *See also supra* note 7.

[17] James Cable will submit audited financial statements to the Commission under seal in a separate submission.

The Commission has regularly found good cause for waiver upon evidence of a history of losses, such as for companies that "have consistently lost money and have shown a negative cash flow."[18] In granting a waiver to Charter from the integration ban, the Commission found that "Charter's showing of five years of negative free cash flow is similar to the showing considered in determining whether a station is a 'failed station' for purposes of a waiver of the Commission's local TV ownership rules."[19]

The integration ban would be even more costly for James Cable (and its customers) than for Charter. Because Charter has more than *100 times* as many cable customers as James Cable, it would be able to obtain CableCARD set-top boxes at lower volume-discount prices than could James Cable. In addition, the Commission noted that "Charter's financial difficulties may be due, in part, to its predominantly rural customer base."[20] Because James Cable is even far more rural than Charter, it faces even greater costs per subscriber in attempting to deliver the infrastructure and services expected for the 21st century to its rural markets. James Cable needs free cash to make the necessary investments to deliver next-generation broadband, HD, VOD, and other advanced services, and to navigate the digital transition. Imposition of the integration ban at this time would further sap the cash that James Cable is already lacking. At this time, James Cable still cannot offer any Video on Demand (VOD) or competitive telephone services, and is able to offer only very limited high-definition (HD) services. Grant of a waiver is critical to enabling James Cable to devote its very limited cash resources to these investment needs.

---

[18] *Applications of BREM Broadcasting and WKRG-TV, Inc., for assignment of the licenses of WCOA-AM and WJLQ-FM*, 9 FCC Rcd 1330 (1994).

[19] *Charter Waiver Order* at ¶ 19, n. 67, citing *2002 Biennial Regulatory Review – Review of the Commission's Broadcast Ownership rules and Other Rules Adopted Pursuant to Section 202 of the Telecommunications Act of 1996, Cross-Ownership of Broadcast Stations and Newspapers, Rules and Policies Concerning Multiple Ownership of Radio Broadcast Stations in Local Markets, Definition of Radio Markets, Definition of Radio Markets for Areas Not Located in An Arbitron Survey Area*, 18 FCC Rcd 13620, 13706 ¶ 221 (2003).

[20] *Charter Waiver Order* at ¶ 18.

Therefore, just as the Commission found good cause and public interest benefits in granting a waiver to Charter, it should grant a waiver to James Cable.[21]

III. Devices for Which James Cable Seeks Waiver

James Cable seeks the ability to offer its customers any type of set-top box functionality they desire. Therefore, its waiver request is not limited to particular types of devices. It would be contrary to the interests of consumers for the Commission to limit its grant of a waiver to limited function set-top boxes in the absence of compelling evidence that application of the rule to James Cable's other devices would deliver a clear benefit to consumers. Instead, the only clear result of such application in the period through 2009 is that it would discourage customers from obtaining HD-capable devices and other advanced features. Such a result would contradict Congress' goal of encouraging the transition to high-definition digital television;[22] the goal of the 1996 Act to deliver advanced services to rural Americans;[23] and Congress' explicit direction to the Commission that in implementing Section 629 it should "avoid actions which would have the effect of freezing or chilling the development of new technologies and services."[24] Instead, Congress required the Commission to grant waivers of its Section 629 regulations where "necessary to assist the development or introduction of [any] new or improved" MVPD service.[25]

Nonetheless, if the Commission were to limit relief to certain devices, James Cable at a minimum would need the continued ability to deploy new Motorola DCT-700 and DCT-2500

---

[21] The Commission granted Charter a one-year waiver and invited Charter to seek additional extensions. Given James Cable's small size and its lesser clout with equipment manufacturers and lenders, one year would be a very short time period. James Cable urges the Commission to grant a waiver of at least the length that it granted to still much-larger Cablevision. *See Cablevision Systems Corporation's Request for Waiver of Section 76.1204(a)(1)*, CSR-7078-Z, Mem. Opinion and Order, DA-07-48 (rel. Jan. 10, 2007) (granting two-year waiver).

[22] *See, e.g.*, Deficit Reduction Act of 2005, Pub. L. 109–171, 120 Stat. 4, 21 (Feb. 8, 2006) (requiring termination of analog broadcasting by February 18, 2009 and establishing subsidy program to encourage digital transition).

[23] *See* Telecommunications Act of 1996, § 706, (codified in notes under 47 U.S.C. § 157) (directing Commission "to encourage the deployment …of advanced telecommunications capability to *all* Americans").

[24] *See* S. Conf. Rep. 104-230, 104th Cong., 2d Sess. at 181 (1996).

[25] 47 U.S.C. § 549(c).

series devices. As the Commission is aware from prior waiver requests, these devices are the lowest-cost options in most cases for delivering digital cable services. None of these devices have high-definition (HD) output, multiple tuners, digital video recorder (DVR) recording or storage capability, or broadband Internet access functionality.[26] The technical specifications for these devices are attached hereto as Exhibit 2.

James Cable also intends to deploy previously used, refurbished devices. The integration ban does not prohibit the use of refurbished, integrated devices, because such devices are not "new."[27] However, if the Commission ever revisits this issue, it should be aware that in some rural areas refurbished devices are the *only* viable option for rural operators. In many of its very smallest communities and remote rural service areas, James Cable delivers digital services via satellite, using the HITS QuickTake platform. This service requires a specialized type of set-top box that no CE manufacturer has announced plans to develop with a CableCARD. James Cable does not have the financial or technical resources to design and build its own separate-security devices, or to make the very expensive system upgrades that would enable James Cable to use conventional set-top boxes in these markets. **Therefore, the only way that James Cable could realistically continue to provide digital service to new customers in these communities is through the redeployment of refurbished or other used devices.** For avoidance of doubt, therefore, if the Commission grants James Cable a waiver only for certain models of devices, it should apply the waiver to the Motorola DSR-410 and DSR-470 devices, which James Cable needs to continue to serve its QuickTake communities.

[26] James Cable believes that these devices meet the criteria for waiver established by paragraph 36 of the *Second Report and Order*. However, in light of the Commission's decision in the *Comcast Order*, and its clarification provided in footnote 56 of the *Charter Waiver Order*, James Cable has not included paragraph 36 of the *Second Report and Order* as a proposed basis for waiver.

[27] *See* CS Docket 97-80, Letter from Adams Cable Equipment to Chairman Martin (Apr. 18, 2007).

CONCLUSION

For the foregoing reasons, James Cable respectfully requests that the Commission grant its request for waiver of the integration ban.

Respectfully submitted,

Kate Adams
Chief Executive Officer
James Cable, LLC
901 Tower Drive, Suite 130
Troy, MI 48098
(248) 641-1770

May 11, 2007

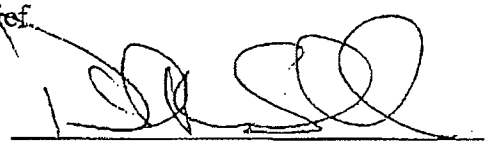
Before the
FEDERAL COMMUNICATIONS COMMISSION
Washington, DC 20554

In the Matter of	)	
	)	
James Cable, LLC's	)	CSR-
Request for Waiver of	)	
47 C.F.R. § 76.1204(a)(1)	)	

DECLARATION OF DANIEL SHOEMAKER

1. My name is Daniel Shoemaker. I am Chief Financial Officer of James Cable, LLC ("James Cable"). I am familiar with James Cable's financial condition; its projected revenues and expenses for 2007; the location and characteristics of its cable systems across the United States; and its need for continued use of integrated set-top boxes.

2. I have read the forgoing Request for Waiver, and declare under penalty of perjury that the facts contained therein and in this Declaration are true and correct to the best of my knowledge, information, and belief.



Daniel Shoemaker
Chief Financial Officer
Executed on May 14, 2007

Exhibit 1

List of James Cable's Franchise Service Areas

JAMES CABLE FRANCHISES

(as of December 2006)

Alabama

Ashland
Beaverton
Chambers County
Cleburne County
Dadeville
Franklin County
Guin
Gu-Win
Hackleburg
Lafayette
Lemar County
Lineville
Marion County
Phil Campbell
Roanoke
Randolph County
Sulligent
Vernon
Wadley
Wedowee

Colorado

Akron
Otis
Yuma

Florida

Alachua
Alachua County
Branford
Chiefland
Cross City
Dixie County
Hawthorne
High Springs
Jena
Levy County
McIntosh
Micanopy
Orange Lake
Reddick
Steinhatchee

Georgia

Arnoldsville
Baldwin County
Crawford
Crawfordville
Eatonton
Gray
Green County
Greensboro
Jones County
Lexington
Madison
Morgan County
Oglethorpe County
Putnam County
Rutledge
Twin Bridges
Union Pointe
Woodville

Louisiana

Allen Parish
Beauregard Parish
Calcasieu Parish
Dequincy
Elton
Gueydan
Kinder
Lake Arthur
Moss Bluff
Oberlin
Old Town
Roanoke
Vinton Parish
Vinton
Welsh
Westlake

JAMES CABLE FRANCHISES

(as of December 2006)

Oklahoma

Achille
Armstrong
Atoka
Bokchito
Bryan County
Buncumbe Creek
Caddo
Calera
Cartwright
Coalgate
Colbert
Cottonwood
Durant
Kingston
Lake Texoma
Marshall County
Ravia
Stonewall
Stringtown
Tishomingo
Tupelo
Tushka
Wapanuka

Tennessee

New Tazewell

Texas

Alvord
Bowie
Bridgeport
Bryson
Chico
Decatur
Graford
Huntington
Jacksboro
Lake Bridgeport
Possum Kingdom
Runaway Bay
Springtown

Wyoming

Carbon County
Converse County
Douglas
Encampment
Glenrock
Goshen County
Hanna
Lingle
Lusk
Platte County
Riverside
Rolling Hills
Saratoga
Torrington
Wheatland

Exhibit 2

Technical Specifications for the Motorola DCT-700, DCT-2500, DCT-2000, DSR-410, and DSR-470 Set-Top Boxes

DCT700 All-Digital Set-top

An interactive digital set-top with small size and big performance.

Motorola's DCT700 provides versatile interactivity in the all-digital network for expanded information and entertainment services.

The Motorola DCT700 is an all-digital set-top that provides you with the advantages of an all-digital network. Digital channels take up less room on your cable TV network. This results in increased "bandwidth" for more channels and services like high-definition TV (HDTV), electronic program guides (EPGs), pay-per-view (PPV), Video on Demand (VOD), and other on-demand information and entertainment services. The DCT700's capabilities are limited only by what your cable service provider offers. If your cable service provider eliminated analog channels in your area and replaced them with "all digital" channels, there would be even more room on the cable network system for additional services such as high-speed data, VOD, and high-definition content.

To decode the data used to transmit the digital channels, a separate set-top is required for each television in the home. The DCT700 provides digital channels to all your TVs through coaxial cable or analog (RCA-type) audio/video jacks.

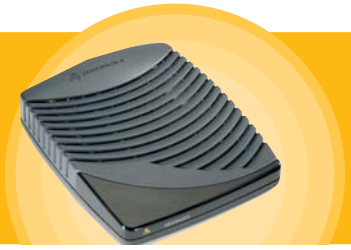
Check with your local cable service provider for availability of the DCT700 in your area.

HIGHLIGHTS

- Supports services such as EPGs, PPV, and VOD
- Reclaims bandwidth allocated to analog channels
- Compatible with Motorola's award-winning secure MediaCipher® conditional access technology
- Two-way capability to enable interactivity
- Motion picture industry standard for coding and decoding video (MPEG-2)
- AC-3 standard for 5.1 Dolby® Digital Surround Sound

CONNECTEDMOTO

MOTOROLA
intelligence everywhere™



DCT700 All-Digital Set-top

Technical Specifications

STANDARD FEATURES

MPEG-2 Digital Video Processor

ATSC standard Dolby® Digital (AC-3) audio processor

ITU standard 64/256 QAM/FEC/enhanced adaptive equalizer

On-board real-time RF return (256 Kbps)

Bitmapped graphics display (4-/8-bit)

90–860 MHz tuner

DES-Based encryption/DCII access control

Digital diagnostics

Frequency agile 2.048 Mbps out-of-band data receiver

Macrovision® copy protection

IR support for remote control

STANDARD INTERFACES

RF remodulator output (ch. 3, 4)

Baseband video and audio outputs

OPTIONAL FEATURES

Motorola Universal Remote Control (DRC450)

To view our full line of Connected Home Solutions, visit our Web site at broadband.motorola.com/consumers

MOTOROLA

521918-001

xxxx-0205-xK

DCT2500

MOTOROLA
intelligence everywhere™

The Motorola DCT2500 is the evolution of the highly popular DCT2000 - the world's most widely deployed digital cable set-top - offering excellent performance and proven reliability at an attractive price point. It provides state-of-the-art digital compression technology, allowing operators a broad range of revenue-generating services.

The DCT2500 can be configured to support real-time, reverse path communications and uses DigiCipher® II, Motorola's Emmy award-winning access control and encryption technology. It can support a wide spectrum of interactive application services including VOD, Internet, Electronic Program Guide (EPG), Impulse Pay-Per-View, e-mail, home shopping and more.

Platform versatility means the Motorola DCT2500 can grow as your home broadband access needs grow. Its 64 and 256 QAM digital processing technology significantly boosts channel capability while delivering unsurpassed digital audio and video quality to TV viewing, giving broadband operators the flexibility and scalability they need.

In summary, the advanced user features and capabilities of the DCT2500 support a host of new services and provide an unparalleled level of reliability, usability and affordability.

The DCT2500 is a full featured digital set-top providing a wide array of capabilities, ease of use and affordability.

HIGHLIGHTS INCLUDE:

- Open architecture supports downloaded third-party software applications
- Scaled video
- High-resolution on-screen graphics
- Enhanced memory
- Advanced security via Motorola DC-II Conditional Access and Harmony DES-based encryption
- MPEG-2 Digital Video Processor
- ATSC standard Dolby® Digital (AC-3) audio processor

Features

- 175 MHz MIPS 32 CPU with 8K instruction and 8K data caches
- High speed, unified memory design with support for up to 64 Mbytes of DDR SDRAM
- 64 PID filters individually assignable to in-band or out-of band streams
- Video decoder with enhanced VBI data processing capability
- Analog/Digital video scaling (picture in graphics)
- High resolution graphics with support for multiple planes as well as current DCT2000 modes
- MPEG-2 Digital Video Processor
- ATSC standard Dolby Digital (AC-3) audio processor
- ITU standard 64/256 QAM/FEC/enhanced adaptive equalizer
- On-board real-time RF return (256 Kbps)
- Clear Analog Channel Processor with BTSC Decoder
- 54-860 MHz tuner
- DES-based encryption/DCII access control
- Digital diagnostics
- Frequency agile 2.048 Mbps out-of-band data receiver
- Macrovision copy protection
- Wide screen (16 x 9) video support
- Full feature access from front panel
- Switched accessory outlet

Optional Features

- Motorola and compatible analog descrambling
- IR blaster tether
- RF bypass or A/B switch
- Telephone modem (14.4 bps)
- S-Video output
- USB Host 1.1 Port
- Universal remote (DRC450)
- Keyboard

Standard Interfaces

- Dolby® 5.1 Digital Audio Output
- RF and Baseband Output (Video, L/R Audio) Ports
- IR Blaster Port
- TVPASS™ renewable security connector
- High/Low speed data output (27 and 2 Mbps)
- RS 232 Serial Port
- 4 digit, 7 segment LED display with IR receiver for remote and/or keyboard

General Specifications

Dimensions	17.13 W x 13.25 H x 2.75 D
Weight	8.6 lbs.

Specifications are subject to change without notice.

MOTOROLA

MGBI

Motorola, Inc.
Broadband Communications Sector
101 Tournament Drive
Horsham, PA 19044
1.800.523.6678
www.motorola.com/broadband

507287-001

5579-0802-0K

MOTOROLA DCT2000 FEATURES AND INTERFACES

FEATURES

Standard Features

- MPEG-2 main level profile video processor
- ATSC standard Dolby Digital® (AC-3) audio processor
- ITU standard 64/256 QAM/FEC/enhanced adaptive equalizer
- On-board real-time RF return (256Kbps)
- High-resolution, bitmapped graphics display (2-/4-/8-bit)
- Clear analog channel processing
- 54-860MHz tuner
- DES-based encryption/DCII access control
- Digital diagnostics
- 2.048Mbps out-of-band data receiver
- Macrovision copy protection
- Wide screen (16 x 9) video support
- 4-line vertical blanking interval pass-through capability (closed caption)
- BTSC stereo decoder
- Full feature access from front panel
- Messaging capabilities

Optional Features

- Motorola and compatible analog descrambling
- RF 1
- IR blaster tether
- RF bypass switch or A/B switch
- Telephone modem (14.4bps)
- S-Video output
- S/PDIF-Dolby AC-3 output
- Optical AC-3 output

INTERFACES

Standard Interfaces

- RF, baseband (video, L/R audio) ports
- Audio loop through connectors
- IR blaster port
- Switched accessory outlet
- RS 232 Serial Port

MOTOROLA

101 Tournament Drive, Horsham, PA 19044
800.523.6678 www.motorola.com/broadband

5317-051-5K

MOTOROLA

Motorola DCT2000

Motorola's most popular interactive digital set-top terminal boasts a wide array of capabilities, ease of use and affordability.

State-of-the-art digital compression technology makes it possible for the Motorola DCT2000 to provide a wealth of new revenue-generating services. Platform versatility allows the Motorola DCT2000 to grow as your home broadband access needs grow. Its 64 and 256 QAM digital processing technology significantly boosts channel capacity while delivering stunningly vivid video and audio. The Motorola DCT2000 can be configured to support real-time, reverse path communications, and uses DigiCipher® II, Motorola's Emmy-award-winning access control and encryption technology. This provides worry-free access to such interactive services as VOD, Internet, e-mail, home shopping and more. The advanced user features and capabilities of the Motorola DCT2000 support a host of new services and provide an unparalleled level of flexibility and control.

- Hybrid digital/analog terminal
- MPEG-2 video and Dolby Digital® audio
- Advanced security via Motorola DC-II Conditional Access and Harmony DES-based encryption
- Supports Open Cable/Harmony specifications
- Open architecture supports downloaded third-party software applications
- High-resolution, on-screen graphics display
- Real-time interactivity for use in VOD systems and Internet access

intelligence everywhere™

The Motorola DCT2000 uses DigiCipher® II, Motorola's Emmy-award-winning access control and encryption technology to provide a worry-free gateway.

OPERATOR BENEFITS

Consumer-Friendly

- Platform for advanced third-party program guides and on-screen navigators
- Program guide feature support includes: Impulse PPV, VOD, sleep/wake timers, favorite channel programming, parental control setup and one-touch VCR programming through an optional IR blaster
- The Motorola DCT2000 fully supports GEMSTAR IPGs and also supports other commercially available Interactive Program Guides

Advanced Audio and Video

- Highest picture quality and compatibility with a wide range of programming
- RF (ch 3/4) Baseband and high-quality component S-Video (optional)
- Movie-like video display provided through wide-screen aspect ratio capability
- Dolby Digital Audio® offers access to the digital audio bitstream through an AC-3 S/PDIF interface (optional)

Two-Way Communications

- Configured with an integrated STARVUE II real-time RF return. An optional STARFONE telephone return modem may be added to support IPPV in one-way networks
- Modems can collect purchase information and return real-time interactive data

Backward Compatibility

- Clear analog processing is standard
- Optional analog descrambling module allows full backward compatibility with existing scrambled analog services

Upgradeable

- Architecture supports software downloads TV Pass Card renewable security system provides a means for upgrading system security
- Capable of High Definition with the addition of a Motorola HDD200

MOTOROLA

DIGITAL ENTERTAINMENT RECEIVER DSR-410 MN/DS

KEY BENEFITS:

- » Support for multiple dual LNBs
- » Seamless cable and satellite technologies integrated and delivered in a single digital entertainment receiver
- » Digital satellite programming plus local content via analog cable
- » Parental controls to block programming and limit access to underage viewers
- » Instant-Pay-Per-View: Movies, Sports, Special Events
- » Dolby® AC-3 Pro Logic® Surround Sound

OPTIONAL ACCESSORIES:

- » Premium 4:1 Remote Control Unit (Satellite receiver, TV, VCR/DVD and stereo)
- » UHF Kit enables wireless control from anywhere in your house

Simple to Operate, Fun to Use, Easy to Set Up

The ultimate in entertainment value comes home with Motorola's Digital Entertainment Receiver. One of the first of its kind - a completely integrated satellite and cable receiver - to enhance basic analog cable service with digital satellite entertainment. The DSR-410-MN/DS offers more programming choices, excellent studio broadcast picture enabled by digital transmission, and a wealth of user features that make the entertainment experience an interactive and satisfying experience.

Watch local news. Seamless integration with cable television brings you the local channels that digital satellite alone does not currently deliver to rural areas.

Find a particular show or sporting event using the on-screen display. Look for programs by name, time, theme or title.

Create a set of favorite channels. Set a personal list of favorites, customized to your own viewing preferences from among hundreds of programming choices available via satellite.

Create a safe environment for your family. Set password-protected parental control guides to allow only the types of shows with the levels of violence, language and content that are appropriate for your family.

Watch a first-run movie - without leaving the house. A wide range of Instant-Pay-Per-View options lets you enjoy an entire evening's worth of great entertainment for a fraction of the cost - and effort - of a trip to the theater. You can also watch sports events and special "live" performances at the touch of a button.

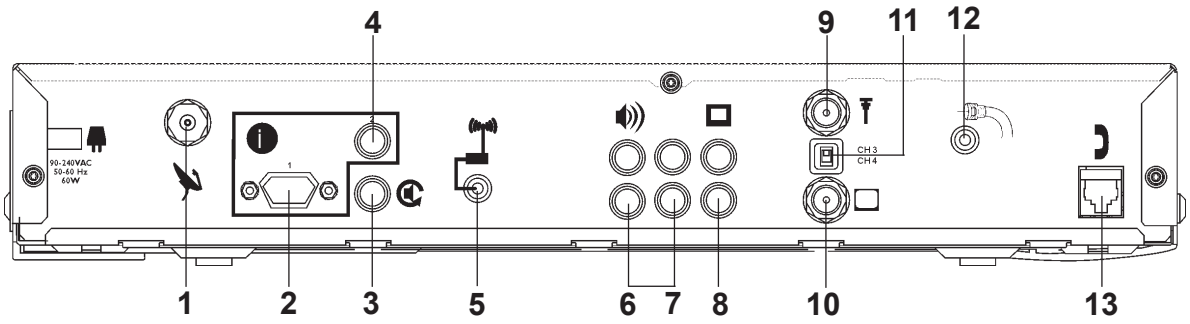
Record your favorite programs. Flexible program timers let you pre-select or use your VCR to record anything you might miss - whether it is a specific event or a daily show.

Create a home theater. Dolby® AC-3 Pro Logic® Surround Sound lets you bring theater-style sound as well as CD-quality music to your home system.

With the latest in satellite programming and a receiver from one of the world leader in end-to-end digital transmission and satellite TV, Motorola, you get the best of cable and the satellite world delivered right into your own home.

MOTOROLA
Broadband Communications Sector

DIGITAL ENTERTAINMENT RECEIVER DSR-410-MN/DS



BACK PANEL CONNECTIONS:

1 SATELLITE IN accepts the input from multiple satellite dishes. Includes digital programming as well as the Interactive Program Guide.

2 MULTIMEDIA PORT ready for future services and High Definition Television (HDTV) connection.

3 DOLBY DIGITAL OUTPUT ready for Dolby AC-3, 5.1 surround sound.

4 ASYNCHRONOUS DATA connection is used for data applications.

5 UHF REMOTE PORT for the optional UHF remote receiver, letting you control your Digital Entertainment Receiver from any room in the house.

6&7 DUAL AUDIO OUTPUTS for stereo sound or full surround audio.

8 DUAL VIDEO OUTPUTS for the television and VCR.

9 ANTENNA IN to allow an off air antenna connection for local broadcasts in the absence of cable or to provide alternate device pass-through i.e., VCR or DVD players.

10 OUT TO TV supplies a VHF signal to your television.

11 CHANNEL 3/4 REMODULATOR SWITCH lets you pick the channel on which your TV will receive the satellite and cable broadcast.

12 CABLE IN connects your cable service line to your receiver to deliver standard analog cable programming.

13 TO PHONE JACK connects your receiver to the phone network to enable instant pay-per-view services, like movies, sports or special events.

SPECIFICATIONS:

L-band Input	
Input Frequency	950 to 2150 MHz
Input Impedence	75Ω
Input Level	-65 dBm to -25 dBm
Noise Figure	8 dB maximum
H/V Input Isolation	40 dBm
Demodulator	QPSK demodulator
Cable Input	
Input Frequency	54 to 860 MHz
Input Impedance	75Ω
Input Level	0 dBm to +15 dBmv
Noise Figure @ 10 dBm input	<10 dBm
Video	
Output Level	1 Vp-p into 75Ω
De-emphasis	525 line CCIR Rec. 405-1
Cable Video (Analog)	
Frequency Response	+1.58 to -1.94 dB, 0.5 to 3.0 MHz +1.58 to -2.98 dB, @ 3.58 MHz
Differential Gain	8.0% p-p maximum
Differential Phase	8.0 deg p-p maximum
S/N	49 dB minimum @ 6 dBmv (unified weighing 100kHz to 4.2 MHz)

VHF Output	
Impedence	75Ω
Channel	Ch. 3 or 4
Level, video	66 dBuV ±3 dB from VHF modulator
Audio	mono
Audio	
Modes	Digital stereo, NTSC subcarrier; analog stereo
Cable Audio (Analog)	
Frequency Response	±3.0 dB, 50 Hz to 10 kHz
Harmonic Distortion	2.0% maximum @ 1 kHz
Remote Control	
Transmitter	Infrared (IR), UHF optional
Batteries	2 x AA type
Range	35 ft (IR) 150 ft (UHF)
Angle	Line-of-site (IR) None (UHF)
Physical Environment	
Temperature	0° to 40°C ambient
Humidity	95% relative
Dimensions	17”W x 4”H x 13.5”D
Weight	18 lbs
Power Input	115V±10% AC;60Hz nominal; 50W maximum
UL	Listed
CSA	Certified

MOTOROLA
Broadband Communications Sector

6450 Sequence Drive
San Diego, CA 92121
Tel 858.455.1500
Fax 858.404.4586

410DS:0K8/00

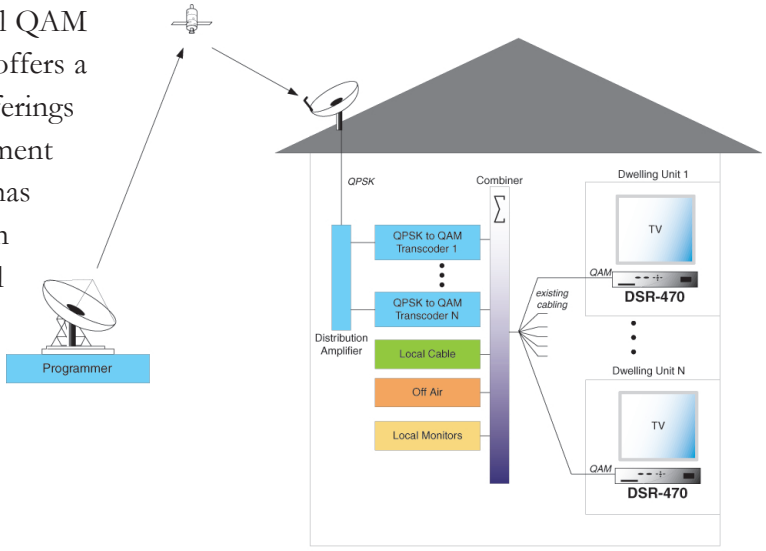
Designed to help small cable systems to integrate digital satellite feeds with local analog service

The Motorola DSR-470 is a consumer receiver that allows multiple dwelling unit (MDU) owners who cannot readily upgrade to digital cable to offer digital programming to tenants with a unique satellite delivery method. Using in-place cable wiring and headend equipment, digital satellite signals can be delivered to an MDU complex where they can be converted from satellite-friendly QPSK modulation to cable-friendly QAM modulation*. When combined with analog cable signals, this "mini cable system" gives viewers instant access to over 200 channels of digital and analog programming over a single coaxial cable without hanging satellite dishes from the balconies of each unit.

To facilitate this type of MDU digital system, the Model DSR-470 accepts program signals, authorization and control commands like a satellite receiver, but is installed at the end of a coax. Equipped with both a digital QAM and analog cable tuner, the Motorola DSR-470 offers a wide range of viewing options - the combined offerings of analog cable and digital satellite - to the apartment or hotel room occupant. In addition, Motorola has developed a unified digital/analog on-screen display so that the viewer can seamlessly scan all available channels.

A typical MDU system using Motorola DSR470s is shown in the diagram below:

- Seamless cable and satellite technologies integrated and delivered in a single digital entertainment receiver
- Integrated program guide for seamless transtition between analog and digital channels
- Instant-pay-per-view for movies, sports and special events
- Dolby brand AC-3 Pro Logic surround sound
- Parental controls to block programming and limit access to underage viewers
- **Optional Accessories:**
  Premium 4:1 remote control unit (receiver, TV, VCR/DVD and stereo)



Multiple Dwelling Unit (MDU)

*Third party QPSK/QAM transcoder required.

DSR-470 DIGITAL ENTERTAINMENT RECEIVER SPECIFICATIONS

CABLE INPUT

Input Frequency	54 to 860 MHz
Input Impedance	75 Ω
Analog Input Level	0 to (+)15 dBmV
Digital Input Level	(-)18 to (-)5 dBmV (64 QAM) (-)12 to (-)5 dBmV (256 QAM)
Noise Figure @ 10 dBm Input	<10 dBm

DIGITAL PROCESSING

Demodulation	64 and 256 QAM
Symbol Rates	5.056941 (64 QAM) 4.966862 and 5.360537 (256 QAM)

CABLE VIDEO (ANALOG)

Frequency Response	(+)1.58 to (-)1.94 dB, 0.5 to 3.0 MHz (+)1.58 to (-)2.98 dB, @ 3.58 MHz
Differential Gain	8.0% p-p maximum
Differential Phase	8.0° p-p maximum
S/N	49 dB minimum @ 6 dBmv (unified weighing 100 kHz to 4.2 MHz)

DIGICIPHER® II COMPOSITE VIDEO

Outline Level	1.0 V p-p ± 10%, sync tip to reference white
Frequency Response (NTSC)	± 1.0 dB, 1 kHz to 4.2 MHz
C-L Delay Inequality	± 50 nsec
Diff Gain	5.0% p-p max (10-90% APL)
Diff Phase	5.0° p-p max (10-90% APL)
Luminance SNR	57 dB

VHF OUTPUT

Impedance	75 Ω
Channel	Channel 3 and 4
Level, Video	66 dBuV ± 3 dB from VHF modulator
Audio	Mono, SAP (menu selected)

VIDEO

Output Level	1 V p-p into 75 Ω
De-emphasis	525 line CCIR Rec. 405-1

AUDIO

Modes	Digital stereo (stereo or surround), S/PDIF for AC-3 where available, analog stereo (BTSC)

CABLE AUDIO (ANALOG)

Frequency Response	±3.0 dB, 50 Hz to 10 kHz
Harmonic Distortion	2.0% maximum @ 1 kHz

DIGICIPHER II AUDIO, ANALOG

Number of Stereo Outputs	2
Impedance	110 Ω maximum
Output Level	5.66 V p-p ± 10% into 2k Ω load with 0 dBFS digital input
Frequency Response	1.0 DB p-p, 20 Hz to 20 kHz
THD	0.3% maximum from 20 Hz to 20 kHz referenced to (+)10 dBm encoder
SNR	85 dB minimum
Stereo Channel Isolation	60 dB minimum

DIGICIPHER II AUDIO, DIGITAL

Number of Outputs	1
Impedance	75 Ω
Signal Level	0.5 p-p ± 20% into 75 Ω load
Connector	RCA
Format	Dolby AC3 or PCM

ASYNCHRONOUS DATA

Data Rate	1200, 2400, 4800, 9600 and 19200 bps
Format	Asynchronous 10 bit characters transmitted LSB first
Mode	Simplex
Interface	RS-232 voltages and impedance levels
Connector	Mini phone

HIGH SPEED DATA

Data Rate	29.27 Mbps ± 20 ppm
Format	AMI encoded with 8% minimum transition density
Multiplex	MPEG-2 compatiable
Signal Level	0.5 V p-p ± 20% AC coupled into a 110Ω
Connector	DB-9

MODEM REPORTBACK INTERFACE

Standard	Bell 212A
Data Rate	1200 baud
Connector	RJ-11 telco plug

.

IR REMOTE CONTROL

Operational Range	35 feet; ±22.5° from center (horizontal axis) ±13.0° from center (vertical axis)

UHF REMOTE CONTROL

Operational Range	150 foot radius from unit

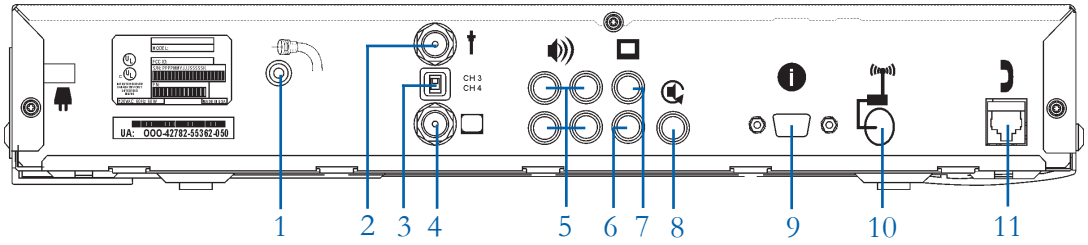
PHYSICAL/ENVIRONMENTAL

Temperature	0° - 40°C (ambient)
Humidity	95% relative
Dimensions	17"(W) x 4"(H) x 13.5"(D)
Weight	approx 11 lbs
Power Input	115V ± 10% AC, 60 Hz (nominal), 25 W (maximum)
Regulatory Compliance	UL listed, CSA certified

OTHER

Remote	2 x AA batteries
Limited Warranty	One year

INPUTS/OUTPUTS



1..... Cable Input
2..... Antenna Input
3..... Channel 3/4 Remodulator
4..... VHF Output
5..... Audio Outputs
6..... VCR Output
7..... TV Output
8..... Dolby Digital Output
9..... Multimedia Port
10..... UHF Remote Port
11..... Phone Jack

6450 Sequence Drive, San Diego, CA 92121 (tel: 858/455-1500) www.motorola.com/broadband

MOTOROLA